The converter module 44 and the first and second drive modules 12, 14 form the electric drive part of the drive system 10 shown in Figure 5. They are combined together compactly downstream of the diesel engine 36 and can thus be installed in an optimal environment for electric machines, for example, no oil in the gear and stators water-cooled from the outside. For the installation of the drive system 10 according to the invention from Figure 5 in a tractor, the shift points 52, 64 and also the spur gears 48, 50, 60, 62 can also be located in front of the differential housing. The planetary gear 54, the brake 71, and also the spur gears 68, 98, 100 could be housed in the installation space of the power take-off.

Other variations for this embodiment are conceivable. Thus, for example, for shifting to the second traveling range, a power shift coupling can be used. The second branch 24 and/or the second output interface 66 could also have a direct, instead of power-diverted, configuration. The shift point 70 could have another transmission ratio. An electric front-wheel drive can replace a mechanical front-wheel drive. An electrically driven front axle with one or two electric machines can replace one conventional front-wheel drive.

Finally, it should be specifically mentioned that the previously explained embodiments are used merely for describing the claimed teaching, but this is not limited to the embodiments.

Claims

1. Drive system for a vehicle, especially for an agricultural or industrial utility vehicle, with a first and a second drive module (12, 14), a first and a second branch (22, 24), at least one controller (16), and at least one output interface (30), wherein the first drive module (12) can be connected to the first branch (22), wherein the second drive module (14) can be connected to the second branch (24), wherein the first branch (22) and/or the second branch (24) can be connected reversibly to the output interface (30), and wherein the drive modules (12, 14) can be controlled with at least one controller (16), such that the drive modules (12, 14) can output a given power -- especially a rotational speed -- continuously and independently of each other.

2. Drive system according to Claim 1, wherein one drive module (12, 14) has an internal combustion engine, especially a diesel engine.

3. Drive system according to Claim 1 or 2, wherein one drive module (12, 14) has an energy source generating electric current and a mechanical conversion stage.

4. Drive system according to Claim 1, wherein one input interface (38) and at least one converter module (44) is provided, wherein the input interface (38) can be connected to an energy source (36) -- preferably constructed in the form of an internal combustion engine of the vehicle -- wherein energy generated by the energy source (36) can be distributed via the input interface (38) to the first and to the second branch (22, 24), wherein the converter module (44) is

connected to at least one drive module (12, 14), and wherein the converter module (44) can be connected to the input interface (38).

5. Drive system according to Claim 4, wherein -- preferably controlled by the controller (16) -- energy can be distributed or transported arbitrarily between the converter module (44) and at least one drive module (12, 14).

6. Drive system according to Claim 4 or 5, wherein the energy source (36) generates mechanical and/or electrical energy.

7. Drive system according to one of Claims 4-6, wherein a controller is provided, which controls the energy source (36), whereby preferably the energy generated by the energy source (36) is variable.

8. Drive system according to one of Claims 4-7, wherein the energy source (36) includes an internal combustion engine, especially a diesel engine, a generator driven by an internal combustion engine, a fuel cell, and/or an electrical storage device -- for example, an accumulator, a capacitor, or a battery.

9. Drive system according to one of Claims 1-8, wherein another output interface (66) is provided, which can be connected reversibly to one of the two branches (22, 24), preferably to the second branch (24).

10. Drive system according to one of Claims 4-9, wherein mechanical and/or electrical energy can be transmitted via the input interface (38), the output interface (30), and/or the other output interface (66).

11. Drive system according to one of Claims 1-10, wherein a shaft is provided for transmitting mechanical energy.

12. Drive system according to one of Claims 1-11, wherein the first and/or the second branch (22, 24) and/or the output interface (30) each has at least one mechanical gear stage, with which preferably a rotational speed reduction and/or a rotational speed reversal can be achieved.

13. Drive system according to Claim 12, wherein the mechanical gear stage has at least one spur gear stage and/or a planetary gear unit.

14. Drive system according to one of Claims 1-13, wherein a reversible connection between an output interface (30) and a branch (22, 24) can be established with the aid of a positive-fit coupling (52, 64, 82, 88).

15. Drive system according to Claim 14, wherein the positive-fit coupling (52, 64, 82, 88) can be shifted by means of an electrically activated shift element, wherein preferably the shift element for coupling or decoupling the reversible connection works against a spring force.

16. Drive system according to Claim 14 or 15, wherein the positive-fit coupling (52, 64, 82, 88) works according to the principle of a claw coupling.

17. Drive system according to one of Claims 4-16, wherein a converter module (44) receives mechanical and/or electrical energy.

18. Drive system according to one of Claims 4-17, wherein a drive module (12, 14) outputs mechanical and/or electrical energy.

19. Drive system according to one of Claims 4-18, wherein a conversion between electrical and mechanical energy is performed with the converter module (44) and the drive modules (12, 14).

20. Drive system according to Claim 19, wherein the converter module (44) has at least one electric machine that can be operated as a generator.

21. Drive system according to Claim 19 or 20, wherein the first and the second drive module (12, 14) each has an electric machine that can be operated as a motor.

22. Drive system according to one of Claims 4-21, wherein a conversion between hydraulic and mechanical energy is performed with the converter module (44) and the drive modules (12, 14).

23. Drive system according to Claim 22, wherein the converter module (44) has at least one mechanically driven, preferably adjustable, hydropump.

24. Drive system according to Claim 22 or 23, wherein the first and the second drive module (14) each has a preferably adjustable hydromotor.

25. Drive system according to one of Claims 4-24, wherein mechanical energy can be converted with the converter module (44) and the drive modules (12, 14).

26. Drive system according to Claim 25, wherein the converter module (44) has an input shaft of a belt gear, a friction gear, or a chain converter.

27. Drive system according to Claim 26, wherein the first and the second drive module (12, 14) each has at least one output shaft of the corresponding gear.

28. Drive system according to one of Claims 4-27, wherein the input interface (38) is mechanically coupled to the first and the second branch (22, 24).

29. Drive system according to Claim 28, wherein the converter module (44) is allocated to the energy source (36) or has an electric machine driven by the energy source (36) and operating as a generator.

30. Drive system according to Claim 28 or 29, wherein the first and the second drive module (12, 14) each has an electric machine operating as a motor.

31. Drive system according to one of Claims 4-27, wherein the input interface (36) is electrically or hydraulically coupled to one of the two branches (22) and the input interface (36) is mechanically coupled to the other of the two branches (24).

32. Drive system according to Claim 31, wherein the converter module (44) has an electric machine (preferably always) driven mechanically by the energy source (36) and operating as a generator.

33. Drive system according to Claim 31 or 32, wherein the first branch (22) can be driven mechanically with the first drive module (12).

34. Drive system according to one of Claims 31-33, wherein the second drive module (14) can be connected to the second branch (24) or has a power-diverted arrangement to this branch, preferably via a planetary gear (54).

35. Drive system according to one of Claims 31-34, wherein a brake (71), preferably a friction brake, with which at least one part of the second branch (24) can be stopped relative to a housing of the drive system (10), is provided in the second branch (24).

36. Drive system according to one of Claims 31-35, wherein the converter module (44) and/or the first drive module (12) are/is arranged essentially coaxial to the input interface (36).

37. Drive system according to one of Claims 31-36, wherein the second drive module (14) is arranged essentially coaxial to the output interface (30).

38. Drive system according to Claim 36 or 37, wherein the first drive module (12) is arranged spatially downstream of the converter module (44) with reference to the input interface (38) and wherein preferably the first drive module (12) is arranged downstream of the second drive module (14) with reference to the input interface (38).

39. Drive system according to one of Claims 1-48, wherein of the converter module (44) and/or the drive modules (12, 14), at least two modules (44, 14) -- preferably all three modules (44, 12, 14) -- are arranged essentially coaxial to each other.

40. Drive system according to one of Claims 1-39, wherein the first branch (22) and the second branch (24) can each be connected reversibly to the output interface (30) via a shiftable multi-step transmission.

41. Drive system according to one of Claims 1-40, wherein the second branch (24) can be connected reversibly to the other output interface (66) via a shiftable multi-step transmission.

42. Drive system according to Claim 40 or 41, wherein at least two different transmission ratios can be realized with the shiftable multi-step transmission.

43. Drive system according to one of Claims 1-42, wherein the output interface (30) can be connected to a traction drive and/or that the other output interface (66) can be connected to a power take-off (PTO).

44. Drive system according to one of Claims 1-43, wherein it is possible to shift between the two branches (22, 24) under loading.

45. Drive system according to one of Claims 1-44, wherein at least one sensor is provided, with which the operating state of at least one component of the drive system (10) can

be detected and can be fed to the controller (16), so that preferably the possible shift states of the drive system (10) can be detected redundantly.

46. Drive system according to one of Claims 1-45, wherein in a first shift state, the first branch (22) is connected to the output interface (30) and wherein the first drive module (12) is connected to the first branch (22).

47. Drive system according to one of Claims 1-46, wherein the second branch (24) is connected to the other output interface (66) and wherein the second drive module (14) is connected to the second branch (24).

48. Drive system according to one of Claims 1-47, wherein in a second shift state, the first and the second branch (22, 24) are connected to the output interface (30) and wherein preferably the rotational speeds of the two drive modules (12, 14) are tuned or synchronized to the rotational speed of the output interface (30).

49. Drive system according to one of Claims 1-48, wherein in a third shift state, the second branch (24) is connected to the output interface (30) and that preferably the second branch (24) is connected to the other output interface (66).

50. Vehicle, especially an agricultural or industrial utility vehicle, preferably a tractor, which has a drive system (10) according to one of Claims 1-49.

51. Drive module and/or converter module and/or controller a drive system (10) according to one of Claims 1-49.